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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/766,255	01/17/2001	William L. Betts	061607-1361	8278
24504	7590	12/28/2004	EXAMINER	
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 100 GALLERIA PARKWAY, NW STE 1750 ATLANTA, GA 30339-5948			LUGO, DAVID B	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/766,255

Applicant(s)

BETTS, WILLIAM L.

Examiner

David B. Lugo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,4,5,8,11,14,16-18,21,23-25,29,31,32 and 34-42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2,4,5,8,11,14,16-18,21,23-25,29,31,32 and 42 is/are allowed.
- 6) ☒ Claim(s) 34-38,40 and 41 is/are rejected.
- 7) ☒ Claim(s) 39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/20/04 has been entered.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 34, 36-38, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tzannes U.S. Patent 6,498,808 (previously cited) in view of Helms et al. U.S. Patent 6,144,695 (submitted by applicant).

4. Regarding claim 34, Tzannes discloses a transmitter in Figure 3 including a bit allocation table (BAT), shown in Table 1 (col. 2, lines 16-38), illustrating that each of a series of tones is associated with a bit density, and the number of bits assigned to each tone is different from the number of bits assigned to the adjacent tones, thereby resulting in different bit densities, wherein the BAT also contains the gain for each subchannel (col. 20, lines 1-10).

5. Tzannes does not expressly disclose a tone ordering element configured to assign bits to at least a portion of the tones in an interleaved manner.

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6. Helms et al. disclose a tone ordering element 330 in the dual latency DMT system of Fig. 3A, considered to be configured to assign bits to at least a portion of the tones in an interleaved manner.

7. It would have been obvious to one of ordinary skill in the art to use a tone ordering element as disclosed by Helms et al. in the dual latency system of Tzannes, in order to comply with the ANSI standard (Helms et al., col. 2, lines 40-42) as Helms et al. further state that tone ordering circuitry is necessary for generating and ordering the discrete multi tones of a DMT modem (col. 3, lines 1-3).

8. Regarding claim 36, Tzannes discloses that the receiver sends a BAT to the transmitter (Fig. 4 – block 440), which may be adapted during system operation (block 420, col. 12, lines 43-44, col. 13, lines 29-44).

9. Regarding claim 37, Tzannes discloses a transmitter in Figure 3 including a bit allocation table (BAT), as shown in Table 1 (col. 2, lines 16-38), illustrating that each of a series of tones is associated with a number of bits, wherein the BAT also contains the gain for each subchannel (col. 20, lines 1-10).

10. Tzannes does not expressly disclose a tone ordering element comprising logic for assigning each of the bits to one of the tones according to the bit and gain information, and logic for interleaving a portion of the bits assigned to adjacent tones.

11. Helms et al. disclose a tone ordering element 330 and an interleaver 325 in the dual latency DMT system of Fig. 3A, and is considered to assign bits to tones, and interleave at least a portion of the assigned bits.

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12. It would have been obvious to one of ordinary skill in the art to use a tone ordering element as disclosed by Helms et al. in the dual latency system of Tzannes, in order to comply with the ANSI standard (Helms et al., col. 2, lines 40-42) as Helms et al. further state that tone ordering circuitry is necessary for generating and ordering the discrete multi tones of the DMT modem (col. 3, lines 1-3).

13. Regarding claim 38, the bits assigned to each tone are determined according to the noise on the subchannels (col. 1, lines 61-65).

14. Regarding claim 40, Tzannes discloses a transmitter in Figure 3 including a bit allocation table (BAT), shown in Table 1 (col. 2, lines 16-38), illustrating that each of a series of tones is associated with a bit density, and the number of bits assigned to each tone is different from the number of bits assigned to the adjacent tones, thereby resulting in different bit densities, wherein the BAT also contains the gain for each subchannel (col. 20, lines 1-10). Tzannes further discloses that the BAT is received at the transmitter (Fig. 4 – block 440, col. 13, lines 29-44).

15. Tzannes does not expressly disclose assigning bits to at least a portion of the tones in an interleaved manner.

16. Helms et al. disclose a tone ordering element 330 in the dual latency DMT system of Fig. 3A, considered to be configured to assign bits to at least a portion of the tones in an interleaved manner.

17. It would have been obvious to one of ordinary skill in the art to use a tone ordering element as disclosed by Helms et al. in the dual latency system of Tzannes, in order to comply with the ANSI standard (Helms et al., col. 2, lines 40-42) as Helms et al. further state that tone

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ordering circuitry is necessary for generating and ordering the discrete multi tones of the DMT modem (col. 3, lines 1-3).

18. Regarding claim 41, Tzannes discloses a transmitter in Figure 3 including a bit allocation table (BAT), as shown in Table 1 (col. 2, lines 16-38), illustrating that each of a series of tones is associated with a bit density, wherein the BAT also contains the gain for each subchannel (col. 20, lines 1-10) and the bit and gain information is assigned to the tones. Tzannes further discloses that the BAT may be sent to the transmitter from a receiver (Fig. 4 – blocks 440, 450, col. 13, lines 29-44), and further disclose that the method may be embodied in a computer program contained in a computer readable medium (e.g. claim 49).

19. Tzannes does not expressly disclose assigning each of the bits to one of the tones according to the bit and gain information and interleaving a portion of the bits assigned to adjacent tones.

20. Helms et al. disclose a tone ordering element 330 and an interleaver 325 in the dual latency DMT system of Fig. 3A, and is considered to assign bits to tones, and interleave at least a portion of the assigned bits.

21. It would have been obvious to one of ordinary skill in the art to use a tone ordering element as disclosed by Helms et al. in the dual latency system of Tzannes, in order to comply with the ANSI standard (Helms et al., col. 2, lines 40-42) as Helms et al. further state that tone ordering circuitry is necessary for generating and ordering the discrete multi tones of the DMT modem (col. 3, lines 1-3).

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22. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tzannes in view of Helms et al. as applied to claim 34 above, and further in view of Levin U.S. Patent 5,822,374 (previously cited).

23. Regarding claim 35, Tzannes and Helms et al. disclose a DMT communication system as described above, but do not expressly disclose raising the power on a first group of tones and lowering the power on a second group of tones in the bit assignment.

24. Levin discloses a method for fine gains adjustment in an ADSL system in Fig. 7 where a gain of a bin is adjusted up while a gain of another bit is adjusted down by a corresponding amount.

25. It would have been obvious to one of ordinary skill in the art to use the fine gain adjustment of Levin in the DMT system of Tzannes and Helms et al. in order to provide the best BER without changing the transmit power (Levin, col. 2, lines 42-53).

Allowable Subject Matter

26. Claims 2, 4, 5, 8, 11, 14, 16-18, 21, 23-25, 29, 31, 32 and 42 are allowed.

27. Claim 39 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to David B. Lugo whose telephone number is 571-272-3043. The examiner can normally be reached on M-F; 9:30-6.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dl
12/21/04


KEVIN BURD
PRIMARY EXAMINER